



Tracking acute pesticide-related illness in the U.S.

The SENSOR-pesticides program

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Surveillance

The ongoing collection, analysis, interpretation, and dissemination of data to prevent and control disease

Thacker and Berkelman, 1988

Data for action

Giesecke, 1999





NIOSH's Main Objective:

To prevent occupational illnesses,
injuries, and hazards ...



which depends on our ability to quantify
and track them using surveillance methods



Why conduct pesticide poisoning surveillance?

- >16,000 pesticide products/~600 active ingredients
- Approximately one billion pounds used annually in US
 - ($\frac{3}{4}$ of which are used in agriculture)
- Growing awareness of pesticide toxicity
- Proper use of agricultural pesticides is difficult to ensure
- Pre-market testing of pesticides isn't comprehensive



Endorsements: Pesticide poisoning surveillance

- 1993 & 2000: United States General Accounting Office
 - Released reports recommending improved surveillance
- 1994: American Medical Association
 - Recommended improved surveillance
- 1996: CSTE recommended adding acute pesticide poisoning as a reportable condition
 - It is a reportable condition in at least 30 states
- 1999: CSTE recommended acute pesticide poisoning indicators
 - This position statement included the SENSOR-pesticides case definition
- 2001: PEW Environmental Health Commission Report,
 - Calls for pesticide poisoning surveillance
- 2001: NIOSH Strategic Surveillance Plan



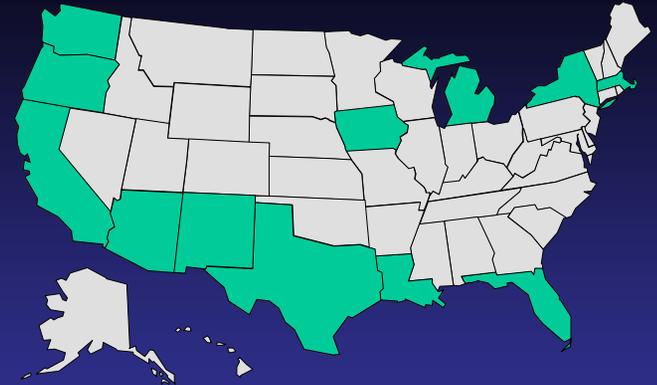


Surveillance Systems for Acute Pesticide-related Illness

- State-based Surveillance Systems
 - SENSOR-pesticides
 - California Department of Pesticide Regulation
- Other Systems Reviewed by US EPA
 - Toxic Exposure Surveillance System
 - Data submitted under FIFRA Section 6(a)(2)



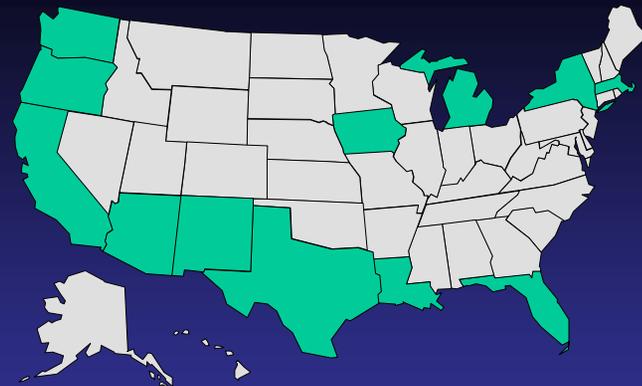
SENSOR-Pesticides



- State-based surveillance
- “Sentinel” case identification and follow-up
- Timely opportunities for prevention/intervention
- Develop state-based models for national implementation
- Standardized case definition, variables, and severity index



SENSOR-Pesticides



- Funded by NIOSH
- Funding began in 1987
- NIOSH technical advisor:
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- Website: www.cdc.gov/niosh/topics/pesticides/



States Participating in SENSOR-Pesticides

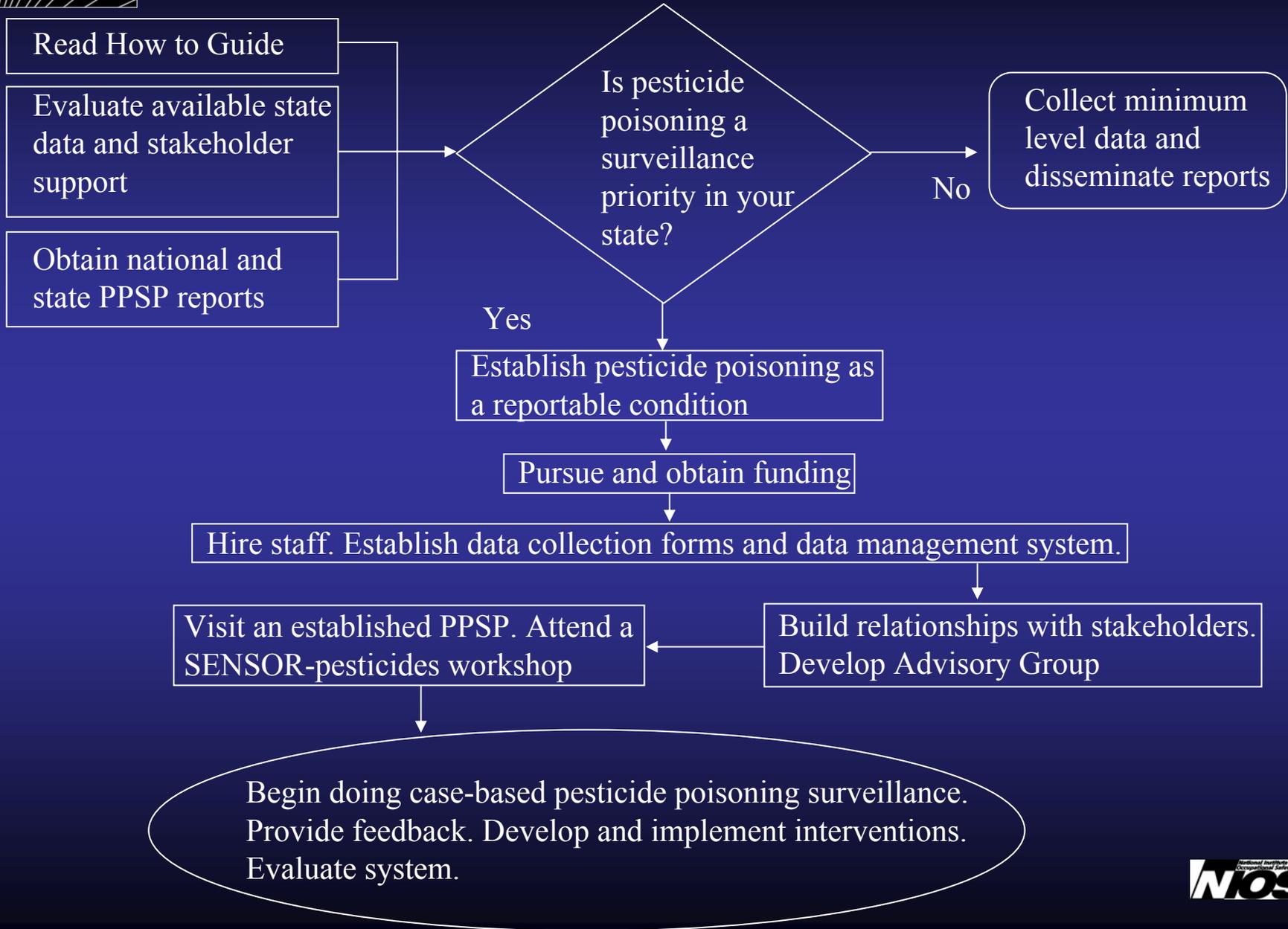
<u>1988-1992</u>	<u>1993-1997</u>	<u>1998-2000</u>	<u>2001-2002</u>	<u>2003-2004</u>
California	New York	Arizona*	Arizona*	Arizona*
Oregon	Oregon	California	California	California
Texas	Texas	Florida	Florida	Florida*
		Louisiana*	Louisiana*	Iowa*
		New York	Michigan	Louisiana*
		Oregon	New York	Maryland*
		Texas	Oregon	Massachusetts
			Texas	Michigan
			Washington	New Mexico
				New York
				Oregon
				Texas
				Washington

* = receives no federal support





Development of a Pesticide poisoning surveillance program





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Recommended Resources

- Reporting rule or statute
 - Prerequisite for reliable reporting at the state level
 - Any *suspected* or confirmed case should be reportable
- Recruit useful reporting sources:
 - Poison control centers (best source of non-occupational cases)
 - Workers' compensation providers (can be excellent for occupational cases)
 - State Department of Agriculture
 - Health care professionals
 - Hospital discharge/ER department logs
 - Clinical Laboratories
- Other issues to consider
 - Right of entry for on-site investigations
 - Data analysis and data dissemination
 - Interventions



Output from SENSOR-pesticides

Estimate of poisoning magnitude





Rate of acute occupational pesticide-related illness (per 100,000 FTEs), 1998-2001

All Industries

State	N	FTE estimates*	Incidence rate**
AZ	29	8,804	3.3
CA: CDHS	991	61,242	16.2
FL	174	28,222	6.2
LA***	39	3,748	10.4
MI***	40	9,381	4.3
NY	106	32,064	3.3
OR	107	6,364	16.8
TX	492	39,214	12.5
WA	456	10,827	42.1
TOTAL(SENSOR)	2,434	199,866	12.2

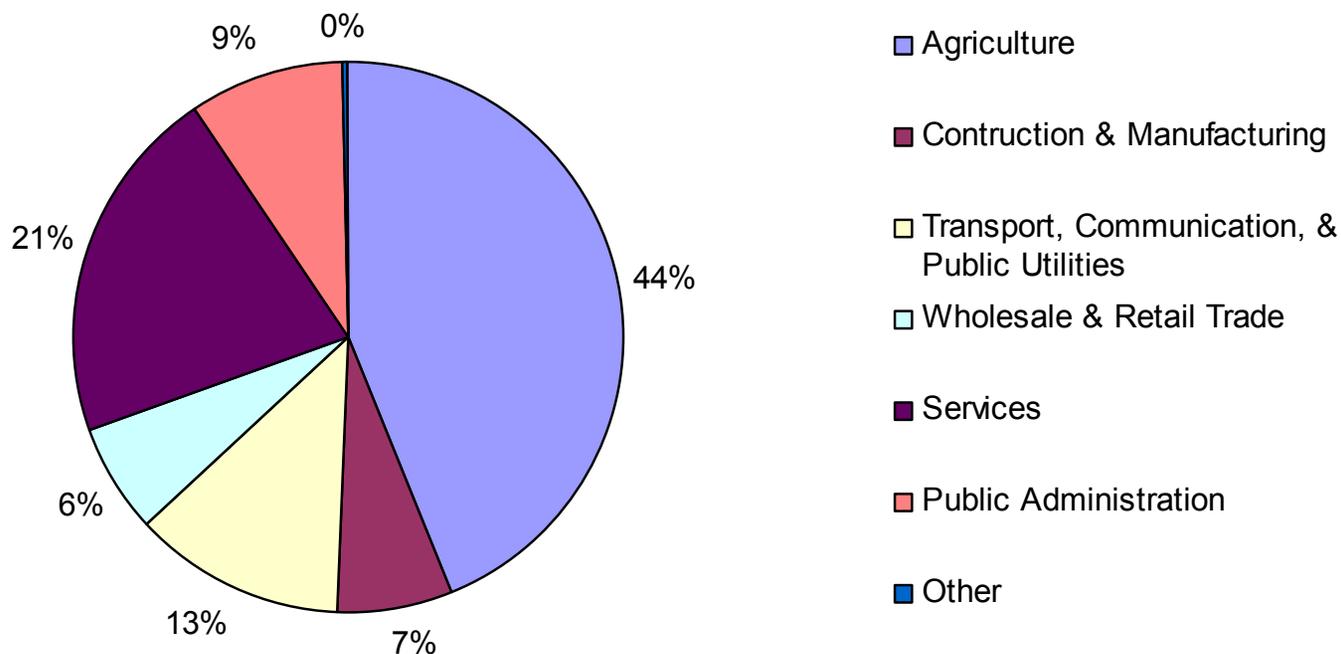
* In thousands

** per million FTEs *** 2000-2001 data only



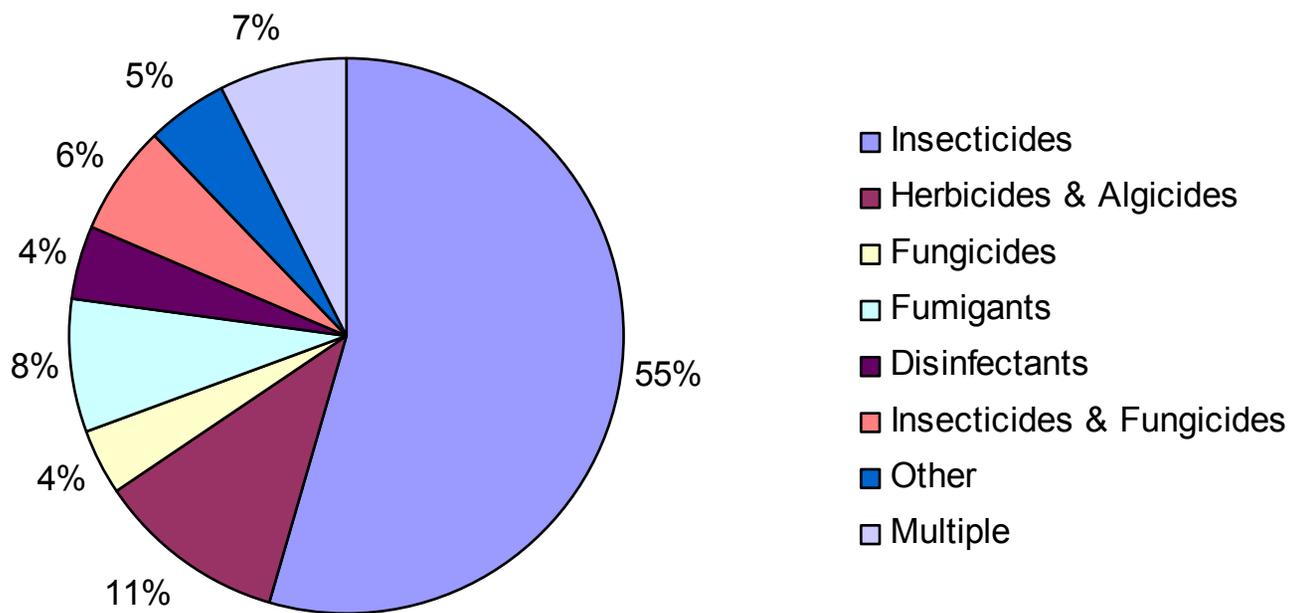


Distribution of cases by industry, 1998-2001





Pesticide Functional Class, 1998-2001 (n=2083)





Rate of acute non-occupational pesticide-related illness (per million) 1998-2001

State	N	Population estimates*	Incidence rate**
AZ	48	20,876	2.3
CA (CDPR)	926	136,746	6.8
FL	411	64,758	6.3
LA	99	17,868	5.5
NY	203	75,974	2.7
OR	154	13,788	11.2
TX	582	84,354	6.9
WA	247	23,764	10.4
TOTAL(SENSOR)	2,670	438,128	6.1
TESS, 2002	21,991	291,600	75.4

* In thousands

** per million population





Limitations of magnitude estimates

- Much evidence of under ascertainment
- Pesticide illness cases often aren't reported to surveillance systems
 - Poisoned persons don't seek medical care
 - Pesticide Illness not correctly diagnosed
 - Health care professionals often fail to report
- Inadequate/lack of access to important data sources
 - Need improved access to poison control center data
 - States with access to submitted workers comp claims appear to have best ascertainment



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Detecting Outbreaks/Emerging Problems





Outbreaks/emerging problems recently identified

- Illnesses associated with insecticide dispensers, 1986-1999
- Illnesses associated with flea control products, 1989-1997
- Farm worker illnesses associated with carbofuran and other pesticides - California, 1998
- Illnesses associated with medfly eradication - Florida, 1998
- Nosocomial pesticide poisoning - Georgia, 2000
- Illnesses associated with mosquito-control efforts in nine states – 1999-2001.
- Illnesses associated with pesticide use at schools, US 1998-2001
- Acute pesticide poisoning among working youth, 1988-1999
- Acute disinfectant poisoning among working youth, 1993-1998
- Illnesses associated with off-target drift of chloropicrin - California, 2003



Outbreaks/emerging problems recently identified



- Cases associated with mosquito control efforts, nine states, 1999 - 2002.
 - 133 cases were identified
 - *MMWR 2003;52:629-634*
 - Most illnesses associated with malathion (n=68), naled (n=23), sumithrin (n=24) and resmethrin (n=10)
 - 73% involved non-occupational exposures
 - Severity was low for 65%, moderate for 34%, and there was one high severity case
 - Conclusion: Adulticides pose a low risk for pesticide poisoning
 - Recommendation: Use IPM with emphasis on larval control and breeding site reduction



Outbreaks/emerging problems recently identified



- **Offsite movement of chloropicrin soil fumigant into a residential neighborhood, October 2003**
 - **152 community residents became ill**
 - Most were of low severity (99%)
 - **Methyl bromide being phased out.**
 - Leading to increased use of alternative fumigants
 - **Most recent of several similar chloropicrin incidents**
 - From 1997-2001, 7 incidents in CA, involving 25 ill individuals
 - **Need for stricter restrictions on chloropicrin use**



Conclusions

- SENSOR-pesticides is an important program
 - Widespread concern about pesticides
 - Pesticide poisoning surveillance is widely endorsed
 - The SENSOR-pesticides program has been productive and has made many meaningful contributions
 - Builds on CDCs long history of collaboration with state departments of health
 - “Best” national surveillance system for acute pesticide poisoning